NOTES.

THE instructive article on Japanese education, in another part of this issue, serves admirably to show the importance of education, especially higher education, as the chief factor of national progress. In a period shorter than that which has elapsed since the passing of our Elementary Education Act in 1870, Japan has introduced and perfected a properly coordinated system of education extending from the primary school to the university. More than this, Japan has put into practice the policy which has always been urged in these columns, that higher education is a State charge which ought not to depend upon private benefaction for its endowment. Reversing the order of this country, the universities of Japan rely financially upon the national exchequer, while the elementary schools, though assisted by the State, are considered primarily a local charge. The national bureau of education has no responsibility for the support of elementary or secondary schools, which derive the greater part of their funds directly from local sources. The department is, however, responsible for all higher education. As an object lesson of the profound influence which universities can exert upon a nation's development Japan's rapid advancement is perhaps unique, and it is to be hoped that the same enlightened views which have during the past thirty years dominated the rulers of that country may soon direct the educational policy of British statesmen.

IN connection with the King's visit to Cambridge to open the new buildings, a descriptive account of which is given in another part of this issue, the *Times* has published a series of three articles entitled "The New Buildings at Cambridge." The first article details the steps taken to put into practice the recommendations contained in a letter—accompanied by a detailed statement concerning the financial condition and requirements of the university—from the Duke of Devonshire, the Chancellor of the university, to the *Times* in 1897. The second article describes the buildings already provided at Cambridge, and the third institutes a comparison between what has been accomplished by the Cambridge University Association, fostered by the Chancellor, and what there is yet to be done so that Cambridge may be fully equipped in the modern sense. We are glad to notice in the concluding article of the series that the special correspondent to the *Times* follows the lead given by the president of the British Association in his Southport address, and quotes the comparison made by him between what our Government does for higher education and the amount of the State aid for universities in Germany and in the United States. The article is strengthened further by several of the quotations which Sir Norman Lockyer made from public speeches of leading British statesmen showing that they were learning to appreciate the intimate connection between the supply of higher education and national prosperity.

THE Paris correspondent of the *Daily Chronicle* announces the death of M. Henry Perrotin, the eminent French astronomer, and director of the Nice Observatory, at the age of fifty-eight.

AT a meeting of the Bath Town Council on Tuesday the Mayor announced that, as the result of further investigations, the Hon. R. J. Strutt has come to the definite conclusion that there are traces of radium in the Bath mineral water.

As announced last week, a Bill for rendering compulsory the use of the metric system of weights and measures was read a second time in the House of Lords on February 23. In connection with this subject the historical documents brought together in a contribution which appears elsewhere in this number are of great interest. From these records it appears that toward the end of the eighteenth century a decree of the French National Assembly suggesting the universal adoption of natural units of weights and measures was communicated to our Government. In the year 1790 the confused condition of our weights and measures was brought before the House of Commons, and decimal standards were suggested. A committee was appointed to consider the matter, and the action taken by the House of Commons was one of the reasons urged in favour of the proposition which led ultimately to the adoption of metric weights and measures by France.

IN the course of the debate in the House of Lords last week on the Metric Weights and Measures Bill, Lord Kelvin gave an amusing illustration of the confusion arising from the use of different systems of weights, for in some experiments with a rifle he had put in a charge which might have caused a disastrous accident if the mistake had not been found out in time. The Marquess of Lansdowne also gave an instance of the confusion arising from the use of different weights in this country and on the Continent. A friend of his travelling abroad sent an English prescription to a local practitioner and received a box of pills of the size of small marbles, which, however, he did not take. The chemist came and said that his assistant did not know the difference between a grain and a drachm, and had put 30 grains of calomel into each pill. The illustrations given by Lord Kelvin and the Marquess of Lansdowne of the misadventures that may arise from the simultaneous use of two different systems of weights and measures show the advisability of there being only one international system.

A CIRCULAR was sent from the Colonial Office to the Colonial Governors in December, 1902, asking what action was likely to be taken in their respective colonies with regard to the resolution adopted at the conference of Colonial Premiers in London in favour of the adoption of a metric system of weights and measures. The replies received have now been published in a Parliamentary paper (Cd. 1940), and are thus summarised. The metric system is already used in Mauritius and Seychelles. The following are favourable to its adoption:—Australia, New Zealand, Cape of Good Hope, Transvaal, Orange River Colony, Southern Rhodesia, Gambia, Northern Nigeria, Gibraltar, British Guiana, Trinidad, Leeward Islands, Windward Islands. Also, with a reservation that it must also be adopted in the United Kingdom or in the Empire generally, Sierra Leone, Southern Nigeria, Ceylon, and Falklands. Hong Kong would take common action with other colonies. The States of New South Wales, Victoria, and Western Australia are also favourable, but, together with South Australia and Tasmania, consider that the matter is one for the Commonwealth Government. Fiji is doubtful, but must follow Australia and New Zealand. British New Guinea would go with Australia. Jamaica and British Honduras need the adoption of the system in the United States of America. The practice of India is important to the Straits Settlements, which would be followed by Labuan; and the Bechuanaland Protectorate would follow the rest of South Africa. St. Helena, Cyprus, Lagos, Wei-hai-wei, Barbados, and Bahamas are on the whole unfavourable. The Gold Coast Colony and the State of Queensland are prepared to adopt, but consider that inconvenience would occur. Natal cannot consider the matter until some general lines of legislation have been agreed upon by His Majesty's Government. No definite answer has been given by Newfoundland, Malta, or Bermuda. Canada has not yet replied.

The Smithsonian Institution has commenced the publication of a quarterly issue of its "Miscellaneous Collections," "designed chiefly to afford a medium for the early publication of the results of researches conducted by the Smithsonian Institution and its bureaus, and especially for the publication of reports of a preliminary nature." The first number of the quarterly issue is a double one, and contains seventeen articles, ranging in size from one page to seventy-three pages, in addition to interesting and timely notes on the activities of the institution, its collections, &c., the whole accompanied with fifty-six plates and numerous text figures. The scope of the journal is broad, the first issue embodying articles on mammalogy, astrophysics, palæontology, archæology, geology, ornithology, ichthyology, ethnology, &c., thus covering a considerable range of scientific subjects.

Prof. Guido Cora writes:—"A slight earthquake occurred in Rome on February 24 at 4h. 53m. 30s.; the amplitude of the undulations registered was between 4 and 5 centimetres; the earthquake lasted ten seconds. Observing it on the hilly part of the town, in the north-west, I noted three slight shocks of undulatory and horizontal character, about west to east in direction. The centre of the earthquake is not yet known, but is supposed to lie in the Sabina, owing to the fact that a more important shock took place on the same day in Magliano dei Marsi, near Avezzano, about 70 km. east-north-east from Rome. A small seismic disturbance was also observed in Rome on February 20."

Great damage was done at Magliano dei Marsi on February 24 in consequence of the earthquake shock. In the village of Rosciolo also, buildings were seriously damaged. Fresh earthquake shocks were felt on the morning of February 25 in the neighbourhood of Avezzano, and also at Rocca di Papa and Velletri.

The *British Medical Journal* states that Prof. Chantemesse has been appointed to the post of general inspector of the Sanitary Service in France, vacant by the death of Prof. Proust, which occurred during the sittings of the International Sanitary Conference in Paris last autumn. The chair of hygiene, also rendered vacant by the death of Prof. Proust, has also been given to Prof. Chantemesse.

We learn from *Science* that Sir Norman Lockyer's address at the Southport meeting of the British Association, on "The Influence of Brain-power on History," has been reprinted from *Littell's Living Age* by the New England Education League and International Education Conference. Copies may be obtained in large or small quantities at the rate of two cents each (postage extra) from Mr. W. Scott, secretary, 40 Dover Street, West Somerville Station, Boston, Mass., U.S.A.

It is announced by the *Times* that at the last meeting of the committee of organisation of the International Congress on Tuberculosis in Paris it was decided to postpone for one year the opening of the congress, which had been fixed for the month of October. The congress will take place in Paris, October 2–7, 1905, in the Grand Palais (Section de l'Avenue d'Antin). This decision was taken in consideration of the International Exposition at St. Louis, and in consideration of the International Tuberculosis Congress, which will meet at St. Louis from October 3–5, 1904.

The following are the prize awards of the Reale Istituto Lombardo for the current session:—Cagnola prizes, for the cure of pellagra; two premiums, one to Dr. Carlo Ceni, of Reggio, Emilia, and one to Drs. Giuseppe Antonini, of Voghera, and Angelo Mariani, of Bergamo; the essay of Dr. Giuseppe Manzini, of Udine, receives honourable mention. For the steering of balloons two premiums have been awarded, the essays dealing in either instance with determinations of air resistances. One premium is given to the engineer Cosimo Canovetti, and the other to Dr. Giorgio Finzi and Dr. Nicola Soldati. For a monographical study of hypophysis, a premium has been conferred on an anonymous competitor. Fossati prize, on the so-called nuclei of origin or termination of the cranial nerves, a premium to Dr. Giuseppe Tricorni-Allegra, of Messina. For the Brambilla industrial prize there has been, as on previous recent occasions, keen competition amongst the Lombardy manufacturers. First prizes are awarded to Baletti and Co. for silk gauzes, and to Lombardi and Macchi for pickles and preserves. Second prizes are awarded to Luigi Spadaccini for wire ropes; Redaelli, Finzi-Perrier and Co. for velvet and plush; Macchi and Passoni for implements for metal work; L. Sconfietti, engineer, for apparatus for producing a moist atmosphere in textile works; and Tommaso Giussani, of Milan, for wood preservation.

The prizes offered by the Reale Istituto Lombardo for future competition are as follows:—The institution prize for April, 1904, will be given for an essay on the work of Vittorio Alfièri; for 1905 on the so-called "ophiolitic" deposits (of Savi) of the northern Apennines. The triennial medals for industrial and agricultural improvements in Lombardy will next be awarded in 1906. The subjects for the Cagnola prizes on themes proposed by the institution are:—for April, 1904, velocity of kathode rays; for 1905, phenomena of catalysis. The subjects designated by the founder for the other prizes are cure of pellagra, nature of miasma, steering of airships, and prevention of forgery. The Brambilla prize is offered for improvements in the Lombardy industries. The subjects for the Fossati prize are:—for 1904, localisation of cerebral centres; for 1905, neurology; and for 1906, visual centres of higher vertebrates. For the Kramer prize the subject is resistances of structures in cement; for the Secco Comneno prize, the virus of rabies; for the Pizzamiglio prize, influence of socialism on private rights; for the Ciani prizes, popular Italian books; for the Zanetti prize, improvements in pharmaceutical chemistry; and for the Tommasoni prize, the life and works of Leonardo da Vinci.

In a recent note attention was directed to the conjectured discovery of a new species of Androsace in the Valle Anzasca (Macugnana). From a note contributed by Prof. Ardissone to a later issue of the Lombardy *Rendiconti* it would now appear that the plant in question does not even belong to the same natural order as Androsace, but is a species of Saxifraga, approaching fairly closely to *S. excavata*. We are thus reminded of a somewhat similar mistake which occurred in our own country when the stunted form of *Campanula glomerata* peculiar to short grass pastures was mistaken for a gentian.

The Engineering Standards Committee has issued a statement of work now in progress. The committee commenced operations in April, 1901, and to it falls the duty of organising the work, considering what subjects shall be dealt with, appointing the chairmen of the various committees, passing the reports of the committees before they are published, controlling the expenditure, and devising the means of raising the necessary funds to carry on the work. This main committee has appointed twelve sectional committees, and under these again are eighteen subcommittees. The first report issued was that on standard rolled sections for constructional work, and the standard sections are now finding their way into use throughout the Government departments as well as the general trade of the country. Another committee has been engaged in drawing up a standard specification for steel used in the hulls of ships, and a small subcommittee is drafting a specification for boiler steel. The locomotive committee has drawn up and forwarded to the Secretary of State for India a report on the subject of standard types of locomotives for India. The subcommittee on tramway rails has published a series of standard sections and accompanying specification. Subcommittees on telegraphs and telephones and on cables have drafted respectively a standard specification for wires used in the construction of telegraphs and telephones, and standard lists of sizes of cables, &c. The secretary of the committee is Mr. Leslie S. Robertson, 28 Victoria Street, Westminster, S.W.

AT a general meeting of the fellows of the British Academy held on February 24, Prof. T. W. Rhys Davids read a paper on "Oriental Studies in England and Abroad," in which he made an interesting comparison between the facilities for higher teaching in Oriental subjects in this and in other countries. In the University of London there is an imposing array of names, but only one salary. At the old universities there are professors of Arabic whose stipends are nominal. There is the Boden professorship at Oxford, and at Cambridge Sanskrit is endowed out of college or university funds. Small grants are made at Oxford for Assyriology, for Semitic teaching at Dublin, and for Chinese at the older universities. Advanced work in Persian is done at Cambridge, and to the list may be added a few readers in Indian law. Compare this with what is done in some Continental countries. Holland has eight fully paid chairs and eight readerships. Germany has fifty-one professors and fifty readers or teachers of lower grade. In Berlin the Oriental Seminar enjoys endowments of 8000*l.* a year, and is attended by 162 university students and 66 other hearers. None of these pay fees. In France there are fourteen professors, five assistant professors, and five native teachers, a library of 35,000 volumes, and a valuable collection of MSS. In St. Petersburg Oriental learning is more recognised than perhaps anywhere else.

THE Yorkshire Naturalists' Union is to be congratulated on the energy displayed by its members in collecting funguses. As the result of this, the January number of the *Naturalist* contains notices of no less than seventeen species not previously recorded from Britain, nine of these being regarded as new to science. The paper is illustrated with an excellent coloured plate, in which some of the more striking forms are depicted.

HOLLOWS in the stems of oak-trees would apparently be the least likely places in which to find salamanders; nevertheless, such situations are the haunt of the Californian *Autodax lugubris*. According to Prof. W. E. Ritter, in the *American Naturalist* for 1903, workmen employed in clearing oaks in the grounds of the California University took numbers of both the salamanders and their egg-clusters from chinks and holes in the bark of these trees.

Two other articles in the *American Naturalist* demand brief mention. In one Mr. H. W. Shimer continues the series devoted to the description of the adaptations of mammals to special modes of life, dealing in this instance with fossorial forms. In the other Prof. W. Patten returns to his favourite theory as to the arthropod affinities of the fish-like Pteraspis and Cephalaspis of the Old Red Sandstone. The subject is rediscussed in considerable detail, the author dismissing the theory that the resemblance between the two groups is due to mimicry or parallelism as unworthy of credence, and reiterating his arguments in favour of their genetic affinity. Much importance is attached to the "fringing lateral plates" of Cephalaspis as indicative of arthropod relationship.

THE habits and life-history of the holothurian *Stichopus japonicus* form the subject of an article by Dr. K. Mitsukuri in the first part of vol. v. of *Annotationes Zoologicae Japonenses*. As this creature forms a marketable commodity, the author discusses the possibility of increasing the supply by cultivation and protection; its roving habits are, however, a bar to dividing up the shore into lots for separate leasing, after the fashion followed in the case of oyster-beds.

A SECOND edition of the "Index Bryologicus," compiled by M. E. G. Paris, is being published by A. Hermann, of Paris; all mosses will be included which were recorded before the year 1901. The work will consist of twenty-four or twenty-five parts, which will be brought out monthly at 2½ francs the part. The editor requests the collaboration of bryologists to send him information with regard to corrections or omissions, which will be collected into an appendix.

THE pioneer work which has been carried out by the British Cotton-Growing Association in introducing cotton cultivation into our colonial possessions is already beginning to show results, and now that the Colonial Office has promised to render its valuable assistance, the success of the scheme seems to be practically ensured. It is significant to find that during the last few weeks samples of cotton grown at Ibadan from American seed have arrived from Lagos which compare favourably with the ordinary upland American cotton. In the West Indies the Sea Island variety has been sown, and it is expected that during this year 20,000 acres will be under cultivation. Samples received from this source have been valued at prices ranging from 1*s.* to 1*s.* 4*d.* per lb. It is intended to introduce cotton into British East Africa and Rhodesia, and samples have already been received from British Central Africa.

BY arrangement with Messrs. Smith, Elder and Co., Messrs. Watts and Co. have issued for the Rationalist Press Association, Ltd., at sixpence, "An Agnostic's Apology," by the late Sir Leslie Stephen, K.C.B.

WE have received the issue for the present year of the "Annuaire de l'Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique." In addition to the usual lists of members and committees, the volume contains biographical notices of MM. C. de la Vallée-Poussin and P. Benoit, and a historical account of the Royal Academy by M. le Chev. Edm. Marchal.

THE twenty-fourth annual report of the Wellington College Natural Science Society affords interesting evidence of the good work which such associations can accomplish in connection with public schools. The sectional reports include an exhaustive meteorological record for each day of 1903, and particulars of the field work in which the members of the society engaged during the session under review.

THE first two volumes of Mr. Herbert Paul's "History of Modern England"—which is to be completed in five volumes—have been published by Messrs. Macmillan and Co., Ltd., at 8*s.* 6*d.* net each. The first volume deals with the events of the years 1846–1855, and the second carries the history as far as 1865. We propose to review Mr. Paul's work when the third volume has been published, but we take this early opportunity of expressing our satisfaction that—following the example of John Richard Green—Mr. Paul records the work done in science in this country during the years with which he is concerned.

A SECOND edition of a "Manual and Dictionary of the Flowering Plants and Ferns," by Mr. J. C. Willis, has been published at the Cambridge University Press. In this edition the two parts of the original work are combined into one volume, while part i. is shortened by the omission of controversial matter, and by the use of smaller type for paragraphs of descriptive terms and other articles not intended for consecutive reading.

IN the Paris *Comptes rendus* for February 1 Messrs. Sabatier and Mailhe describe a method for the reduction of aromatic halogen derivatives by subjecting the vapours mixed with excess of hydrogen to the action of finely divided nickel at a temperature of about 270° C. In these circumstances considerable yields of benzene are obtainable from monochloro- and dichloro-benzene. Similarly toluene is easily obtained from the chlorinated toluenes, and trichlorophenol gives considerable quantities of carbolic acid. With bromine derivatives the reaction proceeds similarly, but not quite so readily as in the case of the chlorine substitution products.

IT is well known that the requirements of the fundamental law of mass action when applied to the electrolytic dissociation of salts, strong acids and bases are not satisfied, and in recent years many attempts have been made to account for this fact. In the Jubelband of the *Zeitschrift für physikalische Chemie,* Prof. Rothmund attributes this to the incorrectness of the values for the degree of dissociation obtained by the usual conductivity and cryoscopic methods. A new method of obtaining the extent of dissociation is developed, and the author shows that in the case of the fairly strong picric acid the values so obtained are in agreement with the mass action law.

THE additions to the Zoological Society's Gardens during the past week include two Two-spotted Paradoxures (*Nandinia binotata*) from West Africa, presented by Mr. A. W. V. Crawley; a Common Paradoxure (*Paradoxurus niger*) from India, presented by Captain Robin; two Asiatic Deer (*Cervus asiaticus*) from Central Asia, presented by H.G. the Duke of Bedford, K.G.; three Hedgehogs (*Erinaceus europoea*), British, presented by Mr. M. Yearsley; a Hairy-footed Jerboa (*Dipus hirtipes*) from North-east Africa, presented by Mr. G. C. Kennedy; a Greater Sulphur-crested Cockatoo (*Cacatua galerita*) from Australia, presented by Mrs. Payne; a Ring-necked Parrakeet (*Palaeornis torquatus*) from India, a Rose-crested Cockatoo (*Cacatua moluccensis*) from Moluccas, a Childron's Snake (*Lialis childroni*) from Madagascar, deposited; a Kiang (*Equus hemionus*) from Tibet, purchased; a Sonnerat's Jungle Fowl (*Gallus sonnerati*) from Southern India; a Golden-bellied Grosbeak (*Pheucticus aurieventris*) from Argentina, received in exchange.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN MARCH:—

Mar. 7.	16h. Venus in conjunction with Saturn. Venus 0° 20′ N.
8.	12h. Ceres in conjunction with the moon. Ceres 0° 29′ S.
16.	17h. 45m. Annular eclipse of the sun invisible at Greenwich.
18.	8h. 56m. Minimum of Algol (β Persei).
20.	13h. Sun enters the sign Aries. Spring commences.
21.	5h. 45m. Minimum of Algol (β Persei).
22.	10h. 0m. to 10h. 41m. Moon occults θ′ Tauri (Mag. 3·9).
25	9h. 2m. to 10h. 11m. Moon occults λ Geminorum (Mag. 3·6).
26.	22h. Jupiter in conjunction with Sun.

VARIABILITY OF MINOR PLANETS.—In *Circular* No. 75 of the Harvard College Observatory Prof. Pickering publishes and discusses the results of Prof. Wendell's observations of the minor planet Iris (7). The planet's magnitude was compared with several B.D. stars, and a variation, having a period of about 6h. 13m. and a range of about two- or three-tenths of a magnitude, was established. This variation closely resembles that of Eros, and the conditions for that planet, as discussed in *Circular* No. 58, are also applicable in the present case.

Prof. Pickering suggests that both Eros, which is now approaching its second stationary point, and Iris should be carefully watched.

Circular No. 64 from the Kiel Centralstelle announces that on February 16 Prof. Paliser discovered a decided variation in the magnitude of the minor planet Hertha (135), having a range of 0·5 mag., from 10·0 to 10·5. The following ephemeris is abstracted from one calculated by Dr. Neugebauer for 12h. Berlin M.T.:—

1904	α	δ	log Δ
	h. m. s.	° ′	
Feb. 29	9 29 30	+15 58·3	0·2948
Mar. 2	9 27 48	+16 4·9	
,, 4	9 26 9	+16 11·2	
,, 6	9 24 34	+16 17·1	
,, 8	9 23 4	+16 22·5	0·3047

R.A. ±1m. Dec. = ±5′·2.

OBSERVATIONS OF VENUS DURING 1903.—In *Bulletin* No. 6 of the Lowell Observatory, Mr. Percival Lowell describes and discusses the objective reality of the markings seen by him on the surface of Venus during 1903. In the first place he discusses the possibilities of illusion on the part of the observer in seeing such faint details, but he has arrived at the conclusion that there are two kinds of *real* markings on this planet's surface. The first class includes the nicks running in from the terminator, the collar round the South Pole, and the two spots, Astoreth and Ashera, upon it. Of these Mr. Lowell has no doubts as to their reality, and from his observations of them he is assured that the period of rotation of the planet is 225 days. The second class of markings includes the long shades, such as Anchises regio and Hero regio, which, commencing at the terminator, run towards the centre of the disc. It is more difficult to confirm the objective reality of these markings, although from the permanence of their observed positions Mr. Lowell concludes that they are real features of the planet's surface. Measurements of the position angle, from the cusp, of the tip of Paris regio on the limb, when the longitude of the centre of the disc was between 79° and 86°, gave as a mean of sixteen measures on eight nights 19° 6′. The position angle of the tip of a marking to the left of this was determined as 27° 1′.

Mr. Lowell strongly insists upon the fact that the appearance of these markings is in no sense "canaliform"; they are not regular, not of even width, not dark or sharply defined, are never doubled, and they do not form a system of interlacing lines as do the "canals" of Mars. Four drawings of the planet's disc at different times are reproduced in the *Bulletin*, and a comparison of two of these made on April 14, 1903, with an interval of nearly six hours between the two observations, shows no change in the positions of the markings, thus indicating that in that interval the effects of the planet's rotation were imperceptible.